CLAIMS

What is claimed is:

[c1]   1.   A method in a Set-Top Box that assists in presenting content to one or more viewers, the method for providing information about interactions with the viewers, comprising:

monitoring received input from the one or more viewers; and

in response to detecting that the received input is an interaction of a type of interest, sending an event message to an event server, the event message identifying the type of the detected interaction and an indication of the Set-Top Box.

[c2]   2.   The method of claim 1 wherein when a detected interaction is of a content control type that indicates a change in the content, additionally sending an indication of the detected interaction to a content provider, so that the content provider can provide new content that corresponds to the indicated change.

[c3]   3.   The method of claim 1 wherein the event server is an Audience Tracker that tracks information related to audiences for multiple groups of content being simultaneously provided.

[c4]   4.   The method of claim 1 wherein the sending of the event message is performed in real-time.

[c5]   5.   The method of claim 1 wherein the event message additionally includes information specific to a current occurrence of the detected interaction.

[c6]   6.   The method of claim 1 wherein the event message additionally includes information related to one or more of the viewers.

[c7]   7.   The method of claim 1 wherein the event message additionally includes information related to the content being presented when the input is received.

[c8]   8.   The method of claim 1 wherein the Set-Top Box is connected to a display device on which video content is presented to the viewers.

[c9]   9.   The method of claim 1 wherein the Set-Top Box is connected to one or more speakers on which audio content is presented to the viewers.

[c10]   10.   The method of claim 1 wherein the Set-Top Box assists in presenting the content to the viewers by receiving the content and providing the content to a content presentation device.

[c11]   11.   The method of claim 10 wherein the content presentation device is a television.

[c12]   12.   The method of claim 1 wherein the Set-Top Box assists in presenting the content to the viewers by modifying received content before the content is provided to a content presentation device.

[c13]   13.   The method of claim 1 wherein the Set-Top Box assists in presenting the content to the viewers by generating content to be provided to a content presentation device.

[c14]   14.   The method of claim 1 wherein the event message is sent using a User Datagram Protocol.

[c15]   15.   The method of claim 1 including, in response to detecting a powerdown of the Set-Top Box, sending an event message to the event server indicating the powerdown.

[c16]   16.   The method of claim 1 including receiving a ping message from the event server, and in response sending a ping response message that indicates that the Set-Top Box is functioning.

[c17]   17.   The method of claim 1 including receiving a message from the event server requesting status information related to the Set-Top Box, and in response gathering the requested status information and sending the gathered information to the event server.

[c18]   18.   The method of claim 1 including receiving a message from the event server requesting information from one or more of the viewers, and in response obtaining the requested information from the viewers and sending the obtained information to the event server.

[c19]   19.   The method of claim 1 wherein the detected interaction is an instruction to change a channel.

[c20]   20.   The method of claim 1 wherein the detected interaction is an instruction to control flow of the content being presented.

[c21]   21.   The method of claim 1 wherein the content is sent from a content server to the Set-Top Box in a multi-cast mode.

[c22]   22.   The method of claim 1 wherein the content is sent from the content server to the Set-Top Box in a single-cast mode.

[c23]   23.   A computer-readable medium whose contents cause a computing device to provide information about interactions with one or more viewers of content being presented, the computing device for assisting in presenting the content to the viewers, the providing of information by performing a method comprising:

> monitoring received input from the one or more viewers; and
>
> in response to detecting that the received input is an interaction of a type of interest, sending an event message to an event server that identifies the type of the detected interaction and that includes an indication of the computing device or of one or more of the viewers.

[c24]   24.   The computer-readable medium of claim 23 wherein the computing device is a Set-Top Box.

[c25]   25.   The computer-readable medium of claim 23 wherein the computer-readable medium is a memory of a computing device.

[c26]   26.   The computer-readable medium of claim 23 wherein the computer-readable medium is a data transmission medium transmitting a generated data signal containing the contents.

[c27]   27.   The computer-readable medium of claim 23 wherein the contents are instructions that when executed cause the computing device to perform the method.

[c28]   28.   A computing device for providing information about interactions with one or more viewers of content being presented, the computing device for assisting in presenting the content to the viewers, comprising:

> a monitoring component capable of monitoring received input from the one or more viewers; and

a notification component capable of, in response to detecting that the received input is an interaction of a type of interest, sending an event message to an event server that identifies the type of the detected interaction and that includes an indication of the computing device or of the one or more viewers.

[c29]   29.   The computing device of claim 28 wherein the monitoring component and the notification component are executing in memory of the computing device.

[c30]   30.   The computing device of claim 28 wherein the computing device is a Set-Top Box.

[c31]   31.   A computing device for providing information about interactions with one or more viewers of content being presented, the computing device for assisting in presenting the content to the viewers, comprising:
　　means for monitoring received input from the one or more viewers; and
　　means for, in response to detecting that the received input is an interaction of a type of interest, sending an event message to an event server that identifies the type of the detected interaction and that includes an indication of the computing device or of the one or more viewers.

[c32]   32.   A method in an event tracking server for monitoring interactions between viewers of content presented on content presentation devices and Set-Top Boxes associated with those content presentation devices, the Set-Top Boxes for assisting in presenting the content to the viewers, comprising:
　　receiving a plurality of event messages that are each sent from one of the multiple Set-Top Boxes in response to an interaction with that Set-Top Box by one or more viewers of a content presentation device associated with that Set-Top Box;

determining one or more of the Set-Top Boxes from which an event

message has not been received for a predetermined period of time;

sending a status message to each of the determined Set-Top Boxes;

determining a current status of each of the determined Set-Top Boxes

based on responses received to the sent status messages; and

tracking audience information for the presented content based on the

received event messages and on the determined current status of at

least some of the Set-Top Boxes.

[c33] 33.   The method of claim 32 including determining a current status for each of the Set-Top Boxes from which an event message has been received during a predetermined period of time based on those received event messages.

[c34] 34.   The method of claim 32 wherein multiple groups of content are being simultaneously presented to distinct content presentation devices, and including tracking audience information for each of the multiple groups of content.

[c35] 35.   The method of claim 32 wherein the receiving of the event messages is in real-time with respect to the corresponding interaction.

[c36] 36.   The method of claim 32 wherein the event messages each additionally include information related to one or more of the viewers of the content presentation device associated with the Set-Top Box from which the event message was received

[c37] 37.   The method of claim 32 wherein the event messages each additionally include information related to the content being presented when the interaction occurs with the Set-Top Box from which the event message was received.

[c38]   38.   The method of claim 32 including presenting the content to the content presentation devices.

[c39]   39.   The method of claim 32 including sending the content to the Set-Top Boxes for presentation on the content presentation devices associated with the Set-Top Boxes.

[c40]   40.   The method of claim 10 wherein the content presentation device is a television.

[c41]   41.   The method of claim 32 wherein the status message is sent using a reliable transmission protocol.

[c42]   42.   The method of claim 32 wherein the status message is a ping message.

[c43]   43.   The method of claim 32 including requesting status information from at least one of the Set-Top Boxes that is related to that Set-Top Box, and in response receiving the requested status information and using the received information in the determining of a current status for that Set-Top Box.

[c44]   44.   The method of claim 32 including requesting from at least one of the Set-Top Boxes information from one or more of the viewers of the content presentation device associated with that Set-Top Box, and in response receiving the requested viewer information and using the received information in the tracking of the audience information.

[c45]   45.   The method of claim 32 wherein the content is sent from a content server to the multiple Set-Top Boxes in a multi-cast mode.

[c46]   46.   The method of claim 32 wherein distinct content is sent from a content server to each of the multiple Set-Top Boxes in a single-cast mode.

[c47]   47.   A computer-readable medium whose contents cause a computing device to monitor interactions between viewers of content presented on remote content presentation devices and remote computing devices associated with those content presentation devices, the remote computing devices for assisting in presenting the content to the viewers, the monitoring of the interactions by performing a method comprising:

> receiving a plurality of event messages that are each sent from one of the
>> multiple remote computing devices in response to an interaction with
>> that remote computing device by one or more viewers of a content
>> presentation device associated with that remote computing device;
> determining one or more of the remote computing devices from which an
>> event message has not been received for a predetermined period of
>> time;
> sending a status message to each of the determined remote computing
>> devices; and
> determining a current status of each of the determined remote computing
>> devices based on responses received to the sent status message,
> so that audience information for the presented content can be tracked
>> based on the received event messages and on the determined
>> current status of at least some of the remote computing devices.

[c48]   48.   The computer-readable medium of claim 23 wherein the computing device is an Audience Tracking Server.

[c49]   49.   A computing device for monitoring interactions between viewers of content presented on remote content presentation devices and remote computing devices associated with those content presentation devices, the remote

computing devices for assisting in presenting the content to the viewers, comprising:

a message receiver component capable of receiving a plurality of event messages that are each sent from one of the multiple remote computing devices in response to an interaction with that remote computing device by one or more viewers of a content presentation device associated with that remote computing device;

a remote computing device status component capable of determining one or more of the remote computing devices from which an event message has not been received for a predetermined period of time, of sending a status message to each of the determined remote computing devices, and of determining a current status of each of the determined remote computing devices based on responses received to the sent status messages; and

an audience tracker component capable of tracking audience information for the presented content based on the received event messages and on the determined current status of at least some of the remote computing devices.

[c50]   50.   A method for selecting content to be presented to multiple display devices each associated with one of multiple remote Set-Top Boxes, the selecting based on event messages provided by the Set-Top Boxes, the method comprising:

receiving a plurality of event messages that are each sent from one of the multiple Set-Top Boxes in response to an interaction with that Set-Top Box by one or more viewers of the display device associated with that Set-Top Box;

identifying from the event messages viewers to whom the content is currently being presented; and

selecting based on the identified viewers distinct content to be presented to the multiple display devices.

[c51]   51.   The method of claim 50 wherein the selected content is an advertisement.

[c52]   52.   The method of claim 51 wherein the advertisement is selected based on the demographics of the viewers.

[c53]   53.   The method of claim 52 wherein a certain advertisement is selected only when the demographics of the viewers exceeds a threshold.

[c54]   54.   The method of claim 51 wherein the advertisement is selected based on a number of viewers.

[c55]   55.   The method of claim 54 wherein a certain advertisement is selected only when the number of the viewers exceeds a threshold.

[c56]   56.   The method of claim 50 wherein the selected content is presented on the display devices only temporarily.

[c57]   57.   The method of claim 50 wherein the distinct content is selected based on a change in demographics of the viewers in at least near real-time.

[c58]   58.   The method of claim 50 wherein the distinct content is selected based on a change in a number of the viewers in at least near real-time.

[c59]   59.   The method of claim 50 wherein the distinct content is selected based on a real-time change in the viewers.

[c60]   60.   The method of claim 50 including sending the selected content to the multiple display devices for presentation.

[c61]   61.   The method of claim 50 including notifying a content server to send the selected content to the multiple display devices for presentation.

[c62]   62.   The method of claim 50 wherein the distinct content is one of multiple different groups of content available for selection, and wherein the distinct content is selected for presentation in a manner so as to maximize revenue provided by a third party based on the current identified viewers.

[c63]   63.   The method of claim 50 wherein the distinct content is one of multiple different groups of content available for selection, and wherein the distinct content is selected for presentation in a manner so as to maximize interest in the current identified viewers in continuing to view the presentation of content.

[c64]   64.   The method of claim 50 wherein the distinct content is one of multiple different groups of content available for selection, and wherein the distinct content is selected for presentation in a manner so as to minimize interest in the current identified viewers in continuing to view the presentation of content.

[c65]   65.   The method of claim 50 wherein the distinct content is one of multiple different groups of content available for selection, and wherein the distinct content is selected for presentation in a manner so as to maximize interest in viewers to whom other content is being presented to select the distinct content for viewing.

[c66]   66.   A computer-readable medium whose contents cause a computing device to select content to be presented to multiple display devices each associated with one of multiple remote computing devices, the selecting based on

event messages provided by the remote computing devices, the selecting of the content by performing a method comprising:

receiving a plurality of event messages that are each sent from one of the multiple remote computing devices in response to an interaction with that remote computing device by one or more viewers of the display device associated with that remote computing device;

identifying from the event messages viewers to whom the content is currently being presented; and

selecting based on the identified viewers distinct content to be presented to the multiple display devices.

[c67]   67.   A method for selecting content to be presented to a television associated with a remote Set-Top Box, the selecting based on event messages provided by the Set-Top Box, the method comprising:

receiving one or more event messages from the Set-Top Box that are each in response to an interaction with that Set-Top Box by one or more viewers of the associated television;

identifying from the event messages one or more viewers to whom the content is currently being presented; and

selecting based on the identified viewers distinct content to be presented to the television.

[c68]   68.   The method of claim 67 wherein the distinct content is selected based on the demographics of multiple viewers of the television.

[c69]   69.   The method of claim 67 wherein a certain advertisement is selected as the distinct content based on real-time demographics of the viewers.

[c70]   70.   The method of claim 67 wherein the distinct content is selected based on a type of one or more of the interactions that are not content control instructions.

[c71]   71.   A computer-readable medium whose contents cause a computing device to select content to be presented to a television associated with a remote computing device, the selecting based on event messages provided by the computing device, the selecting of the content by performing a method comprising:

> receiving one or more event messages from the remote computing device that are each in response to an interaction with that remote computing device by one or more viewers of the associated television;
>
> identifying from the event messages one or more viewers to whom the content is currently being presented; and
>
> selecting based on the identified viewers distinct content to be presented to the television.

[c72]   72.   A method for detecting unauthorized viewing of content being presented to multiple display devices each associated with one of multiple remote Set-Top Boxes, the method comprising:

> receiving a plurality of event messages that are each sent from one of the multiple Set-Top Boxes in response to an interaction with that Set-Top Box by one or more viewers of the display device associated with that Set-Top Box; and
>
> identifying from the event messages that the content is not authorized to be presented on the display device associated with one of the Set-Top Boxes.

[c73]   73.   The method of claim 72 including halting the sending of the content to the display device associated with the one Set-Top Box based on the identifying.

[c74]   74.   The method of claim 72 wherein the identifying is based on information in one or more event messages received from the one Set-Top Box.

[c75]   75.   The method of claim 72 wherein the identifying is based on not receiving one or more event messages from the one Set-Top Box.

[c76]   76.   The method of claim 72 wherein the identifying is performed in a real-time manner.

[c77]   77.   A computer-readable medium whose contents cause a computing device to detect unauthorized viewing of content being presented to multiple display devices each associated with one of multiple remote computing devices, the detecting of the unauthorized viewing by performing a method comprising:

          receiving a plurality of event messages that are each sent from one of the
              multiple remote computing devices in response to an interaction with
              that remote computing device by one or more viewers of the display
              device associated with that remote computing device; and
          identifying from the event messages that the content is not authorized to be
              presented on the display device associated with one of the remote
              computing devices.

[c78]   78.   A method for monitoring content being presented on one or more remote display devices each associated with a distinct remote Set-Top Box, the monitoring based on event messages provided by the Set-Top Boxes, the method comprising:

   receiving an indication to monitor content being presented on one or more remote display devices each associated with a distinct remote Set-Top Box;

   receiving one or more event messages from one or more of the Set-Top Boxes that are each in response to an interaction with one of the Set-Top Boxes by one or more viewers of the display device associated with that one Set-Top Box;

   determining based on the received event messages the content that is being presented on the display devices; and

   providing an indication of the determined content.

[c79]   79.   The method of claim 78 including presenting the determined content.

[c80]   80.   The method of claim 78 including verifying authority of a requester that supplied the indication to monitor the content before the providing of the indication of the determined content to the requester.

[c81]   81.   The method of claim 78 including monitoring multiple distinct groups of content each being presented on at least one remote display device associated with a remote Set-Top Box based on event messages received from those Set-Top Boxes, and providing indications of the multiple distinct groups of content simultaneously.

[c82]   82.   The method of claim 78 wherein the monitoring is performed in real-time.

[c83]   83.   A computer-readable medium whose contents cause a computing device to monitor content being presented on one or more remote display devices each associated with a distinct remote computing device, the monitoring based on event messages provided by the remote computing devices, the monitoring of the content by performing a method comprising:

>   receiving an indication to monitor content being presented on one or more remote display devices each associated with a distinct remote computing device;

>   receiving one or more event messages from one or more of the computing devices that are each in response to an interaction with one of the computing devices by one or more viewers of the display device associated with that one computing device;

>   determining based on the received event messages the content that is being presented on the display devices; and

>   providing an indication of the determined content.

[c84]   84.   A method for determining popularity of at least one of multiple groups of content each being presented to multiple display devices, each display device associated with one of multiple remote Set-Top Boxes, the method comprising:

>   receiving a plurality of event messages that are each sent from one of the multiple Set-Top Boxes in response to an interaction with that Set-Top Box by one or more viewers of the display device associated with that Set-Top Box;

>   determining based on the received event messages a number of display devices on which at least one of the multiple groups of content is being presented; and

>   providing an indication of the determined number of display devices for at least one of the multiple groups of content.

[c85]   85.   The method of claim 84 wherein the number of display devices is determined for each of the multiple groups of content, and wherein the providing of the indication includes providing an indication of the one group of content having the most determined display devices.

[c86]   86.   The method of claim 84 including determining based on the received event messages a number of viewers viewing at least one of the multiple groups of content.

[c87]   87.   The method of claim 84 wherein the determining of the number of display devices is performed in a real-time manner.

[c88]   88.   A computer-readable medium whose contents cause a computing device to determine popularity of at least one of multiple groups of content each being presented to multiple display devices, each display device associated with one of multiple remote computing devices, the determining of the popularity by performing a method comprising:

receiving a plurality of event messages that are each sent from one of the multiple remote computing devices in response to an interaction with that remote computing device by one or more viewers of the display device associated with that remote computing device;

determining based on the received event messages a number of display devices on which at least one of the multiple groups of content is being presented; and

providing an indication of the determined number of display devices for at least one of the multiple groups of content.

[c89]   89.   A method for adjusting user interface functionality provided in conjunction with content being presented on a remote display device associated

with a remote Set-Top Box, the adjusting based on event messages provided by the Set-Top Box, the method comprising:

    receiving one or more event messages from the Set-Top Box that are each in response to an interaction with that Set-Top Box during which one or more viewers of the associated display device invoke provided user interface functionality;

    determining based on the user interface functionality invocations to adjust the user interface functionality provided to the viewers; and

    adjusting the user interface functionality provided to the viewers.

[c90]   90.   The method of claim 89 wherein the adjusting of the provided user interface functionality includes enhancing the provided user interface functionality based on a level of previous user interface functionality invocations.

[c91]   91.   The method of claim 89 wherein the adjusting of the provided user interface functionality includes decreasing the provided user interface functionality based on a level of previous user interface functionality invocations.

[c92]   92.   The method of claim 89 wherein the adjusting of the provided user interface functionality includes modifying types of content flow control functionality provided.

[c93]   93.   The method of claim 89 including providing a warning to the viewers based on the previous user interface functionality invocations.

[c94]   94.   The method of claim 89 wherein the adjusting is performed in a real-time manner.

[c95]   95.   A computer-readable medium whose contents cause a computing device to adjust user interface functionality provided in conjunction with content

being presented on a remote display device associated with a remote computing device, the adjusting based on event messages provided by the remote computing device, the adjusting by performing a method comprising:

receiving one or more event messages from the remote computing device that are each in response to an user interface functionality interaction with that remote computing device by one or more viewers of the associated display device;

determining based on the user interface functionality interactions to adjust the user interface functionality provided to the viewers; and

adjusting the user interface functionality provided to the viewers.

[c96]   96.   A method for determining reactions of viewers to content being presented to multiple display devices, each display device associated with one of multiple remote Set-Top Boxes, the method comprising:

receiving a plurality of event messages that are each sent from one of the multiple Set-Top Boxes in response to an interaction with that Set-Top Box by one or more viewers of the display device associated with that Set-Top Box;

determining based on the received event messages the display devices that change whether the content is being presented; and

providing an indication of the reaction of the viewers to the content based on the determined display device changes.

[c97]   97.   The method of claim 96 wherein the determining is based on interactions that occur during the presenting of the content.

[c98]   98.   The method of claim 96 wherein the determining is based on interactions that occur shortly after ending the presenting of the content.

[c99]   99.   The method of claim 96 wherein the determining is based on interactions that occur shortly after beginning the presenting of the content.

[c100]   100.   The method of claim 96 wherein the indicated reaction is negative when the determined display device changes show the display devices stopping the presenting of the content.

[c101]   101.   The method of claim 96 wherein the determining is performed in a real-time manner.

[c102]   102.   A computer-readable medium whose contents cause a computing device to determine reactions of viewers to content being presented to multiple display devices, each display device associated with one of multiple remote computing devices, the determining of the reactions by performing a method comprising:

receiving a plurality of event messages that are each sent from one of the multiple remote computing devices in response to an interaction with that remote computing device by one or more viewers of the display device associated with that remote computing device;

determining based on the received event messages the display devices that change whether the content is being presented; and

providing an indication of the reaction of the viewers to the content based on the determined display device changes.